

NEW LARVAL FOOD PLANTS AND BIOLOGICAL NOTES FOR SOME BUTTERFLIES (LEPIDOPTERA: PAPILIONOIDEA) FROM EASTERN AUSTRALIA

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Abstract

New larval food plants and biological data are recorded for several pierid and lycaenid butterflies from eastern Australia. Among the Pieridae, *Capparis lucida* (Capparaceae), naturalised *Cakile maritima* (Brassicaceae) and *Lysiana spathulata* (Loranthaceae) are recorded for *Elodina queenslandica kuranda* De Baar & Hancock, *Pieris rapae* (Linnaeus) and *Delias argenthona* (Fabricius), respectively. Among the Lycaenidae, *Acacia acinacea* (Fabaceae) is recorded for the first time for *Jalmenus evagoras* (Donovan), the ant *Dolichoderus scrobiculatus* (Mayr) (Dolichoderinae) is newly recorded attending the larva of *Nesolycaena medicea* Braby and oviposition on *Dipodium variegatum* (Orchidaceae) by *Zizina otis* (Fabricius) is noted.

Introduction

The following observations document new larval food plant associations and biological notes for several butterflies from the families Pieridae and Lycaenidae from eastern Australia and contribute to the growing knowledge of insect-plant associations for the Australian fauna as a whole (see Braby 2000, Edwards *et al.* 2001, Orr and Kitching 2010). The records are based on observations made between northern Queensland and eastern Victoria during 2003-12 and are presented in annotated form, summarising details of food plant locality, date and early stages. Nomenclature for butterflies follows Braby (2010) and for plants follows APNI (2011). Voucher numbers refer to plant specimens lodged in the Northern Territory Herbarium, Palmerston (DNA); ant specimens are deposited in the Entomology collection at CSIRO Tropical Ecosystem Research Centre, Darwin.

Observations

PIERIDAE

Elodina queenslandica kuranda De Baar & Hancock, 1993

Capparis lucida (DC.) R.Br. ex Benth. (Capparaceae) (voucher M.F. Braby 047, DNA). Crystal Creek, c. 65 km NW of Townsville, Qld (18.92853°S, 146.31978°E), sea level, 7.v.2009. Females were observed around midday ovipositing on *C. lucida*, which grew as a large shrub in coastal vine thicket; numerous freshly emerged males were present in the area, frequently flying around the outer foliage of the larval food plant. Adults occurred together with those of *E. perdita* Miskin, 1889.

Pieris rapae rapae (Linnaeus, 1758)

**Cakile maritima* Scop. (Brassicaceae) Sea Rocket. (1): Mallacoota, Vic., sea level, 19.iii.2005. Numerous eggs were found on the foliage of *C. maritima* growing as a low spreading succulent up to 60 cm high on coastal beach

sands and sand dunes; at 1230 h (EST) a female was observed ovipositing on the larval food plant. (2): Thurra River, Croajingalong National Park, Vic. (37°46'43"S, 149°18'26"E), sea-level, 21.iii.2005. Numerous eggs were found on the foliage of *C. maritima* growing on coastal beach sands behind the public camp ground; two early instar larvae were also collected, one of which was reared to the pupal stage in captivity on this plant.

Delias argenthona argenthona (Fabricius, 1793)

Lysiana spathulata (Blakely) Barlow (Loranthaceae) (voucher M.F. Braby 048, DNA). 14 km WSW of Torrens Creek, Qld (20.80502°S, 144.88722°E), 450 m a.s.l., 9.v.2009. A cohort comprising 36 second instar larvae was recorded on the foliage of *L. spathulata* parasitising a small *Acacia* tree growing in open woodland; the larvae, which were moulting to the third instar, were grouped into three clusters on separate leaves of the food plant.

LYCAENIDAE

Jalmenus evagoras (Donovan, 1805)

Acacia acinacea Lindl. (Fabaceae). Pauline Toner Reserve, Eltham, Vic. (37.71860°S, 145.16409°E), 110 m a.s.l., 1.i.2012. A colony was recorded breeding on two shrubs (ca 1.5 m high) of *A. acinacea* growing about 10 m apart along a roadside verge adjacent to the reserve; one plant supported approximately 50 late instar larvae/pupae and the other approximately 70 late instar larvae/pupae, which were distributed in small cohorts amongst the foliage and attended by numerous ants, *Iridomyrmex* complex A sp. B. Numerous adults, many of which were mating, were present on the plants.

Nesolycaena medicea Braby, 1996

Boronia eriantha Lind. (Rutaceae). White Mountains National Park, Qld (20.44143°S, 144.84248°E), 700 m a.s.l., 28.iv.2009. A late instar larva feeding openly on *B. eriantha* during the day was attended by a medium-sized black ant, *Dolichoderus scrobiculatus* (Mayr, 1876) (Hymenoptera: Formicidae: Dolichoderinae). The ant was observed for about 5 minutes before it was collected; during this period it constantly attended the larva, occasionally leaving the larva for a few seconds before resuming to 'palpate' the eversible tentacular organs. The larva was collected and reared to adult in captivity, emerging a few weeks later on 21.v.2009.

Zizina otis labradus (Godart, [1824])

Burrewarra Point, NSW (35°49'50"S, 150°13'45"E), 50 m a.s.l., 14.xii.2003. Two eggs were recorded on the green central stem of a hyacinth orchid, *Dipodium variegatum* M.A.Clem. & D.L.Jones (Orchidaceae). The identity of the eggs was uncertain, but they were suspected to be of *Z. otis* (Fabricius), which was present in the area with adults flying amongst the ground layer close to the orchid. The eggs were collected and one of the emerging larvae was reared on naturalised *Trifolium* in captivity; it pupated on 9.i.2004 and a male emerged eight days later on 17.i.2004.

Discussion

The larval food plants and life history of *Elodina queenslandica* De Baar & Hancock are poorly known. The only recorded larval food plant is *Capparis sepiaria* L. (Braby 2000) but at Crystal Creek ovipositing females of *E. q. kuranda* seemed to ignore this plant in favour of *C. lucida*, which grew in close proximity to vines of *C. sepiaria*. Moreover, males appeared to concentrate their patrolling and searching behaviour around the foliage of large shrubs of *C. lucida* and presumably were using the food plant as an encounter site to locate newly eclosed (receptive) females.

Species of *Delias* Hübner feed on a wide variety of Loranthaceae throughout the Australian and Oriental Regions but exploitation of the genus *Lysiana* appears to be comparatively rare (Braby 2006). Previously recorded larval food plants for this plant genus include *L. subfalcata* (Hook.) Barlow and *L. maritima* (Barlow) Barlow, both species being listed for *D. nigrina* (Fabricius, 1775) from eastern Australia (Moss 2005). More recently, Moss (2010) listed *L. maritima* for *D. argenthona* but *L. spathulata* has not previously been recorded for this or any other species of *Delias*.

Among the Australian Lycaenidae, *Jalmenus evagoras* breeds on a wide range of acacias, with more than 20 species recorded (Pierce and Nash 1999). However, the larvae have not previously been recorded feeding on the phyllodenous *A. acinaceae*. This butterfly-plant association is unexpected because the two species are largely allopatric, with only a narrow range of overlap in central Victoria: *A. acinaceae* reaches its southeastern geographical range limit near Melbourne, which is close to the southwestern limit of *J. evagoras*. At Eltham, *J. evagoras* frequently exploits saplings of the bipinnate *A. mearnsii* De Wild.; however, at Pauline Toner Reserve small plants of this species were in limited supply and most plants were taller, comprising a component of a dense, shrubby long-unburnt understorey. Lack of suitable *A. mearnsii* saplings may have caused the butterfly to exploit alternative species of *Acacia* at this site.

The ant *Dolichoderus scrobiculatus* has previously been recorded associated with the lycaenids *Theclinesthes miskini* (T.P. Lucas, 1889) and *Lampides boeticus* (Linnaeus, 1767) (Eastwood and Fraser 1999, Eastwood *et al.* 2008). Johnson and Valentine (2001) documented the life history and larval food plant of *Nesolycaena medicea* but did not record the presence of ants attending the early stages. This species and the closely related *N. albosericea* (Miskin, 1891) have been considered to be not attended by ants in the larval or pupal stages; however, larvae of the two other members of the genus, *N. urumelia* (Tindale, 1922) and *N. caesia* d'Apice & Miller, 1992, are occasionally associated with a few small black ants in the genera *Iridomyrmex* Mayr, *Monomorium* Mayr and *Polyrhachis* Smith (Eastwood and Fraser 1999, Braby 2000, Eastwood *et al.* 2008). These data suggest that *Nesolycaena* Waterhouse & Turner has a facultative association with ants,

with at least four ant genera now recorded. A prediction, therefore, is that ants will occasionally be found to attend the early stages of *N. albosericea*.

For *Zizina otis* it was not determined if the orchid constituted a larval food plant; however, this is considered unlikely given the general specialisation of *Z. otis* on legumes and the fact that hyacinth orchids have a relatively short reproductive phase (shorter than the life cycle of the butterfly). Presumably, the orchid grew in proximity to a breeding area of the butterfly and a female(s) was using it as a substrate on which to secure her eggs.

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